Reveo-0166USACON00
10/607,693
Supplemental Amendment 6-1-05

IN THE CLAIMS

1-7. Canceled

8. (Currently Amended) A ~~VOD~~ variable optical delay system comprising a refractive index switching system wherein upon passage of an optical signal through the refractive index switching system, a delay is ~~varied~~ imparted by a ~~selected~~ fluid within a fluid-holding region, said fluid selected from the group consisting of air and one or more refractive liquids.

9. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 8, wherein one or more fluid-holding regions capable of having at least two different fluids exchanged therein are provided.

10. (Canceled)

11. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 9, wherein the region dimensions are essentially constant.

12. (Canceled)

13. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim ~~12~~8, wherein the ~~medium~~ delay imparted is about 100 fs to about 10 ps.

14. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 8, wherein an optical ~~path length~~ delay is ~~varied~~ imparted by introducing or evacuating ~~either air or liquid material~~ the fluid within the fluid-holding region along the optical signal travel path.

15. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 14, the fluid-holding region including one or more predefined gaps, wherein the introduction and/or ~~evacuating~~ evacuation of either air or liquid material is into said predefined gaps ~~within the fluid-holding region~~.

16. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 15, further comprising ~~wherein the introduction and/or evacuating is performed with~~ one or more micro-pumps~~,~~ or micro-fluidic actuators for introducing and/or evacuating the fluid.

17. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim ~~15~~16, wherein the micro-fluidic actuators ~~may~~ are selected from the group consisting of ~~comprise~~ electro-static actuators, electro-magnetic actuators, electro-thermal actuators, ~~or~~ and ~~any other~~ MEMS actuators.

18. (Canceled)

19. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim ~~18~~8, wherein the refractive fluid ~~may~~ comprises ~~any~~ a chemically stable liquid compounds capable of providing a known refractive index value ~~greater than the other fluid~~.

20-26. -(Canceled)

27. (Currently Amended) A variable optical delay ~~VOD~~ system comprising optical manifolds including one or more index switching systems, the index switching system including:

~~wherein~~ one or more fluid holding regions capable of having at least 2 different fluids exchanged therein, said fluid selected from the group consisting of air and one or more refractive liquids,

wherein said one or more regions are ~~arranged~~ positioned within ~~in~~ a folded optical path to allow pass-through or delay depending on the choice of fluid in the region~~, the delay being based on the folded path length~~.

28. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 27, wherein the folded path is extended by serial regions capable of having at least 2 different fluids exchanged therein.

29. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 27, wherein a coarse delay is imparted on the optical signal.

30. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 29, wherein the coarse delay is about 10 ps to about 1 ns.

31. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 27, wherein multiple folds are provided.

32. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 31, wherein multiple folds comprise single folds stacked on top of each other.

33. (Currently Amended) The variable optical delay ~~VOD~~ system as in claim 31, wherein multiple folds comprise a single monolithic block of molded manifold

34. (Currently Amended) A variable optical delay ~~(VOD)~~ system including ~~comprising:~~ an optical switching subsystem, ~~;~~ ~~and~~ an optical manifold subsystem; and a refractive index switching system, said a refractive index switching system comprising~~:~~:

one or more fluid holding regions capable of having at least 2 different fluids exchanged therein, said fluid selected from the group consisting of air and one or more refractive liquids, wherein upon passage of an optical signal through the refractive index switching system, a delay is imparted by a fluid within the fluid-holding regiona ~~variable fluid refraction altering subsystem~~.

35. (Canceled)

36. (Currently Amended) The variable optical delay system ~~VOD~~ as in claim 34, wherein the optical switching subsystem comprises a liquid crystal cell.

37. (Currently Amended) The variable optical delay system ~~VOD~~ as in claim 34, wherein the optical manifold subsystem comprises a plurality of polarization switches having variable optical paths, wherein at least one optical route comprises a folded path.

38. (Currently Amended) The variable optical delay system ~~VOD~~ as in claim 37, wherein the polarization switches comprise liquid crystal cells.

39. (Currently Amended) The variable optical delay system ~~VOD~~ as in claim 34, wherein the optical manifold subsystem comprises a plurality of total internal reflection switches having variable optical paths, wherein at least one optical ~~route~~ paths comprises a folded path.

40. (Currently Amended) The variable optical delay system ~~VOD~~ as in claim 34, wherein the a refractive index switching system~~variable fluid refraction altering subsystem~~ comprises at least one micro-fluidic actuator.

41-42. (Canceled)

43. (Currently Amended) The variable optical delay system ~~VOD~~ as in claim 40, wherein the a refractive index switching system ~~variable fluid refraction altering subsystem~~ comprises a first

fluid region having a quantity of a first fluid with a first refractive index and a second fluid region having a quantity of the first fluid, further wherein the micro-fluidic actuator injects a second fluid with a second refractive index into the first fluid region or the second fluid region.

44. (Canceled)